

IN THE CLAIMS:

A complete listing of all the claims is enclosed herewith.

Claims 1 to 10 (Cancelled).

Claim 11. (New).

A method of heat treatment of glass materials and natural materials specifically of volcanic origin selected from the group comprising basalt, granite, marble, andesite and syenite,

the method including melting and refining said materials to form objects, comprising

exposing the treated material to microwave radiation at a frequency range from 1 MHz to 10 GHz and at a temperature range from the ambient temperature to 1800° C in a batch or continuous production process in a presence of an inert, microwave absorbing additive selected from the group comprising carbides, nitrides or borides in an amount from 1 to 100 g per 1 kg of the glass materials or natural materials.

Claim 12. (New).

The method of heat treatment of glass materials and natural materials of claim 11,

wherein the frequency of microwave radiation is in a range selected from the group consisting of 1 to 100 MHz and 500 MHz to 10

GHz.

Claim 13. (New).

The method of heat treatment of glass materials and natural materials of claim 11,

wherein the frequency of microwave radiation is selected from the group consisting of 27 MHz, 896 MHz, 915 MHz and 2450 MHz and the amount of the inert additive is from 5 to 50 g per 1 kg of the glass materials or natural materials.

Claim 14. (New).

The method of heat treatment of glass materials and natural materials of claim 13,

wherein the inert additive is selected from the group consisting of tungsten carbide - WC, silicon carbide - SiC, boron carbide - B₄C, titanium carbide - TiC or vanadium nitride - VN, boron nitride - BN, silicon nitride - Si₃N₄ or titanium boride - TiB₂, niobium boride - NbB₂, vanadium boride - VB₂, tungsten boride - WB₂, zirconium boride ZrB₂, and aluminum boride AlB₂ and a mixture thereof.

Claim 15. (New).

The method of heat treatment of glass materials and natural materials of claim 11,

wherein the glass materials comprise cullet of common waste glass of any kind or glass batches of all types of mixtures of cullet and glass and glass batches.

Claim 16. (New).

An apparatus for heat treatment of glass materials and natural materials, comprising substantially a microwave furnace comprising an outer shell (8.2) provided with a cover (10) and an inner shell (8.1) and at least one microwave generator (1.1, 1.2, 1.3, 1.4) with double emission and a total output from 0.1 to 1 kW per 1 kg of the processed glass materials or natural materials arranged substantially in an intermediate space between the outer shell (8.2) and the inner shell (8.1);

a tank (2) disposed inside the inner shell (8.1) and a heat insulating material (3) filling up an inner space of the furnace between the tank (2) and the inner shell (8.1); and

said insulating, microwave permeable material (3) having a heat resistance up to 1750°C and being selected from the group consisting of aluminum oxide - corundum and silicon oxide - quartz.

Claim 17. (New).

The apparatus of claim 16,

wherein the tank (2) is provided with a fill-neck (7) and a side or bottom tapping point (13).